

List of Symbols

N	Total number of samples in a dataset
\mathcal{I}	Input floor plan image
\oplus	Dilation
\ominus	Erosion
S_a	Structuring Element
\mathcal{I}_w	Input floor plan image without walls
F	Furniture template signature
\mathcal{C}	Furniture count
\mathcal{T}	Furniture type set
\mathcal{B}	Blobs obtained through morphological fill operation
$\mathbf{CC}()$	Connected Component Operator
$ \cdot $	Cardinality
C	Connected components of a blob
\mathcal{A}	Set containing areas of the connected components in a blob
$S()$	Signature
G_k	Topology graph representing adjacencies in k^{th} floor plan
V_k	Vertex set of a graph representing k^{th} floor plan
E_k	Edge set of a graph representing k^{th} floor plan
λ_k	Eigen values
$\vec{\phi}_k$	Eigen vectors
Adj_k	Adjacency matrix of the k^{th} graph
\vec{F}_k	Feature vector
Cv	Covariance Matrix
$cost_{qm}$	Match cost between two floor plan samples q and m
\mathcal{C}^u	Unique furniture inside each floor plan
Ar	Carpet Area of a room
L_k	k^{th} layout
$ \cdot $	Absolute value of a function
$A(\cdot)$	Carpet Area Ratio of a room corresponding to a layout
$e(\cdot, \cdot)$	Edit Distance
$\rho(\cdot)$	Room adjacency string matching score
$\psi(\cdot)$	Carpet Area Ratio matching score
$\phi(\cdot)$	Difference in number of furniture
$\theta(\cdot)$	Difference in type of furniture
F^+	Cumulative match score of a feature be it θ, ψ, ϕ, ρ
η	Weight Coefficients
I	Image domain
S	Sketch domain
f_I^i	i^{th} floor plan image sample
f_S^j	j^{th} floor plan sketch sample from S-ROBIN
$\mathbf{F}(\cdot)$	Mapping function mapping images to sketches
$\mathbf{G}(\cdot)$	Mapping function mapping sketches to images
D_S	Adversarial Discriminator for sketches
D_I	Adversarial Discriminator for images

$f_S \rightarrow p(f_S)$	Probability distribution of a sample $f_S \in \mathcal{S}$
$f_I \rightarrow p(f_I)$	Probability distribution of a sample $f_I \in I$
$S2I_A(\cdot)$	Adversarial loss function for mapping a floor plan sketch to an image
$I2S_A(\cdot)$	Adversarial loss function for mapping a floor plan image to a sketch
$CCL(\cdot)$	Cycle consistency loss
$X(\cdot)$	Final objective function in Cycle GAN
α	Hyperparameter in Cycle GAN network
\mathcal{E}	Encoder
\mathcal{D}	Decoder